

### PATENT COOPERATION TREATY

From the

INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

BARRY J. SWANS

25 IAN 2011

NOTIFICATION OF TRANSMITTAL OF INTERNATIONAL PRELIMINARY **EXAMINATION REPORT** 

(PCT Rule 71.1)

Date of Mailing

Date of Mailing (day/month/year) 13 MAY 2005

Applicant's or agent's file reference

SWANSON & BRATSCHUN, LLC 1745 SHEA CENTER DRIVE, SUITE 330

HIGHLANDS RANCH, CO 80129

GENO200.1.7/PCT

IMPORTANT NOTIFICATION

International application No.

International filing date (day/month/year)

Priority date (day/month/year)

PCT/US03/25027

Applicant

08 August 2003 (08.08.2003)

08 August 2002 (08.08.2002)

EVOLUTIONARY GENOMICS, LLC

- 1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
- A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to
- Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

#### REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices)(Article 39(1))(see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT

Name and mailing address of the IPEA/US

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Form PCT/IPEA/416 (July 1992)



# PCT.

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

| Applicant's or agent's file reference                                      |   |
|--|---|
| GENO200.1.7/PCT International application No.                              | FOR FURTHER ACTION  See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/41   |
| increational application No.   | International filing date (day/month/year) Priority date (day/month/year)   |
| PCT/US03/25027   | On A control (auy month year)   |
| International Patent Classification (IPC) of                               | 08 August 2003 (08.08.2003) 08 August 2002 (08.08.2002)   |
| IPC(7): G06E 17/00 17/10   | one of the striction and IPC  |
| Applicant 1700, 17710, 17711; C12Q   | 1/68, 1/02; G01N 33/00, 33/15 and US C1: 702/19, 20; 435/6, 29; 800/3; 436/183  |
|  | ,   |
| EVOLUTIONARY GENOMICS, LLC   |   |
| 1. This international prelimina Examining Authority and is                 | ry examination report has been prepared by this International Preliminary transmitted to the applicant according to Article 36.                                 |
|  | apprount according to Afficie 36.   |
| 2. This REPORT consists of a   | total of $\frac{3}{2}$ sheets, including this cover sheet.  |
| <del>( )</del>   |   |
| which have been  | npanied by ANNEXES, i.e., sheets of the description, claims and/or drawings   |
| before this Authority (see   | ed and are the basis for this report and/or sheets containing rectifications made e Rule 70.16 and Section 607 of the Administrative Living rectifications made |
|  | of the Administrative instructions under the Down   |
| These annexes consist of a to  | tal of Theate   |
|  |   |
| 3. This report contains indication   | ns relating to the following items:   |
| <u> </u>   | to the following items:   |
| I Basis of the report  |   |
| <del></del> 1  | ·   |
| Inonty   | ·   |
| III Non-establishment  | of report with regard to novelty, inventive step and industrial applicability   |
| IV Lack of unity of inv  | and industrial applicability  |
| <del></del>  |   |
| V   Reasoned statement   | under Article 35(2) with regard to novelty, inventive step or industrial  |
| applicability; citation  | ns and explanations supporting such statement   |
| VI Certain documents of  | ited  |
| []   |   |
| - Cortain defects in th  | e international application   |
| VIII Certain observations  | on the international application  |
|  | approunce   |
|  |   |
| te of submission of the demand   | Date of completion of this report   |
| September 2004 (08.09.2004)  | Date of completion of this report   |
| _  | 15 April 2005 (15.04.2005)  |
| me and mailing address of the IPEA/US                                      |   |
| 8 al des of the II EA/I IX   | Authorized officer  |
| Mail Stop PCT, Attn: IPEA/ US  | / 1 //  |
| Mail Stop PCT, Attn: IPEA/ US<br>Commissioner for Patents<br>P.O. Box 1450 | James Martinell , Dish LLL An, I  |
| Mail Stop PCT, Attn: IPEA/ US<br>Commissioner for Patents                  | James Martinell Juliel For Telephone No. (703) 308-0196   |



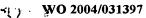
| International application No. | _ |
|-------------------------------|---|
| PCT/US03/25027                |   |

| I D  |   |
|--|---|
| I. Basis of the report   |   |
| 1. With regard to the elements of the international application:*  |   |
| the international application as originally filed.   |   |
| the description:   |   |
| pages 1-41 as originally filed   |   |
| pages NONE filed with the domain   |   |
| pages NONE, filed with the letter of   | ·   |
| the claims:  |   |
| pages 42 and 43 as originally filed pages NONE as awarded (together with   |   |
| pages NONE , as amended (together with any statement) pages NONE , filed with the demand   | under Article 19                                |
| pages 44 and 45 , filed with the letter of 05 March 2004 (05   | 5.03.2004)                                      |
| the drawings:  | .03.2004)                                       |
| pages NONE as originally filed   |   |
| pages NONE filed with the demand   |   |
| pages NONE , filed with the letter of  | <u> </u>  |
| the sequence listing part of the description:  |   |
| pages NONE, as originally filed pages NONE, filed with the demand  |   |
| pages in the letter of   |   |
| With regard to the language oil the alarm  |   |
| With regard to the language, all the elements marked above were availal language in which the international application was filed, unless otherwith these elements were available or furnished to this Authority in the faller   | able or furnished to this Authority in the      |
| These elements were available or furnished to this Authority in the following  | wing language this item.                        |
| the language of a translation furnished for the purposes of internation the language of publication of the internation.  | which is:                                       |
| the language of publication of the international application (under l  | ional search (under Rule23.1(b)).               |
| the language of the translation furnished for the management of  | Kule 48.3(b)).                                  |
| the language of the translation furnished for the purposes of interna 55.2 and/or 55.3).   | ational preliminary examination(under Rules     |
| With regard to any nucleotide and/or amino acid sequence disclosed in international preliminary examination was carried out on the basis of the  |   |
| contained in the international application in printed form   | •   |
| filed together with the international application in computer readable   | a farms   |
| furnished subsequently to this Authority in written form.  | e torm  |
| furnished subsequently to this Authority in computer readable form.  |   |
| The statement that the subsequently furnished with an incident   | ng does not go beyond the disalas               |
| international application as filed has been furnished.   | go beyond the disclosure in the                 |
| The statement that the information recorded in computer readable for has been furnished.   | rm is identical to the written sequence listing |
| The amendments have resulted in the cancellation of  |   |
| the description, pages NONE  |   |
| the claims, Nos. 14  |   |
| the drawings, sheets/fig NONE  |   |
| This report has been established as if (some of) the amendments had not been beyond the disclosure as filed as indicated in the Comments had not been  | n made, since they have been considered to go   |
| placement sheets which have been furnished to the receiving Office in response to eport as "originally filed" and are not annexed to this report since they do not core prepared to the referred to under item to the referred to under item to the referred to the referred to the referred to under item to the referred to the referred to under item to the referred to the referred to under item to the referred to the referr | an invitation under Article 14                  |
| y on to much them I  | i and annexed to this report.                   |
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### INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/US03/25027

| 1. STATEMENT  |                   |  |                            |
|---|-------------------|--|----------------------------|
| Novelty (N)   | 01.:              |  |                            |
|   |                   | 5-8 and 10-13                          | Y                          |
|   | Claims            | 1-4 and 9                              | N                          |
| Inventive Step (IS)   | Claime            | 5-8 and 10-13                          |                            |
|   |                   | 1-4 and 9                              | Y                          |
|   |                   | z vana y                               | N                          |
| Industrial Applicability (IA)   | Claims            | 1-13                                   |                            |
|   |                   | NONE                                   | Y                          |
|   |                   |  | N                          |
| Plaims 5-8 and 10-13 meet the criteria set out in PCT ethods.  Italiams 1-13 meet the criteria set out in PCT Article 3 made or used in industry. | 3(4), and thus ha | ve industrial applicability because th | e subject matter claimed c |
| *.  |                   |  |                            |
| NEW CITATIONS   |                   |  |                            |
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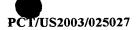


- a) aligning homologous nucleotide sequences of at least about two at least two individual organisms, wherein said at least two individual organisms are selected from the group consisting of individual organisms of a single strain, individual organisms of different strains, individual organisms of the same species, individual organisms of different species, and any combination of the foregoing; and
- b) detecting a region of polynucleotide sequence for which the number of nucleotide differences/site indicates an evolutionary bottleneck;
- c) determining that the region identified in b) is a non-coding region, whereby a regulatory element is identified.
- 6. The method according to any one of claims 1-4, wherein the identifying the number of nucleotide differences/site is calculated by  $\pi = 1/[n(n-1)/2] \sum_{i < j} \prod ij / L$ , n is number of sequences, where i and j represent any two sequences being compared in a series of sequences and L = sequence length.
- 7. The method according to any one of claims 1-4, further comprising determining if the region displays a signature of positive selection.
- 8. The method of Claim 9, wherein said determining comprises calculating a Ka/Ks value.
  - 10. The method according to any one of claims 1-4, wherein the method is performed in an automated pipeline.
  - 11. The method according to any one of claims 1-4, wherein the at least two strains and/or individuals of a single strain is at least ten strains and/or individuals of a single strain.
  - 12. The method of Claim 11, wherein the at least two strains and/or individuals of a single strain is at least fifteen strains and/or individuals of a single strain.
    - 13. A method for identifying an agent which may modulate a commercially or aesthetically relevant trait that is unique, enhanced or altered in the domesticated organism as

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compared to other domesticated or ancestral species of the domesticated organism, said method comprising contacting at least one candidate agent with a cell, model system or transgenic plant or animal that expresses a polynucleotide sequence that is an evolutionary bottleneck, wherein the agent is identified by its ability to modulate function of the polypeptide encoded by the polynucleotide.

- 14. A method for correlating a nucleotide sequence which is an evolutionary bottleneck to a commercially or aesthetically relevant trait that is unique, enhanced or altered in a domesticated organism, comprising:
  - a) identifying a nucleotide sequence which is an evolutionary bottleneck; and
- b) analyzing the functional effect of the presence or absence of the identified sequence in the domesticated organism or in a model system.